Experiment 2

Assay of Indomethacin by Acid-Base Titration

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Acid-Base Titration

Is an experimental procedure used for determination of the unknown concentration of base or acid by neutralizing reaction.

$$NaOH + HCl \longrightarrow NaCl + H_2O$$

Acidimetry and Alkalimetry Assays

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- **Both methods** are defined as the analytical methods that can be used for the determination of the content of the active compounds in pharmaceutical preparations and in pure forms.

- **In both methods** the neutralized reaction is fundamental for the determination of weight of the content.

Acidimetry and Alkalimetry Assays

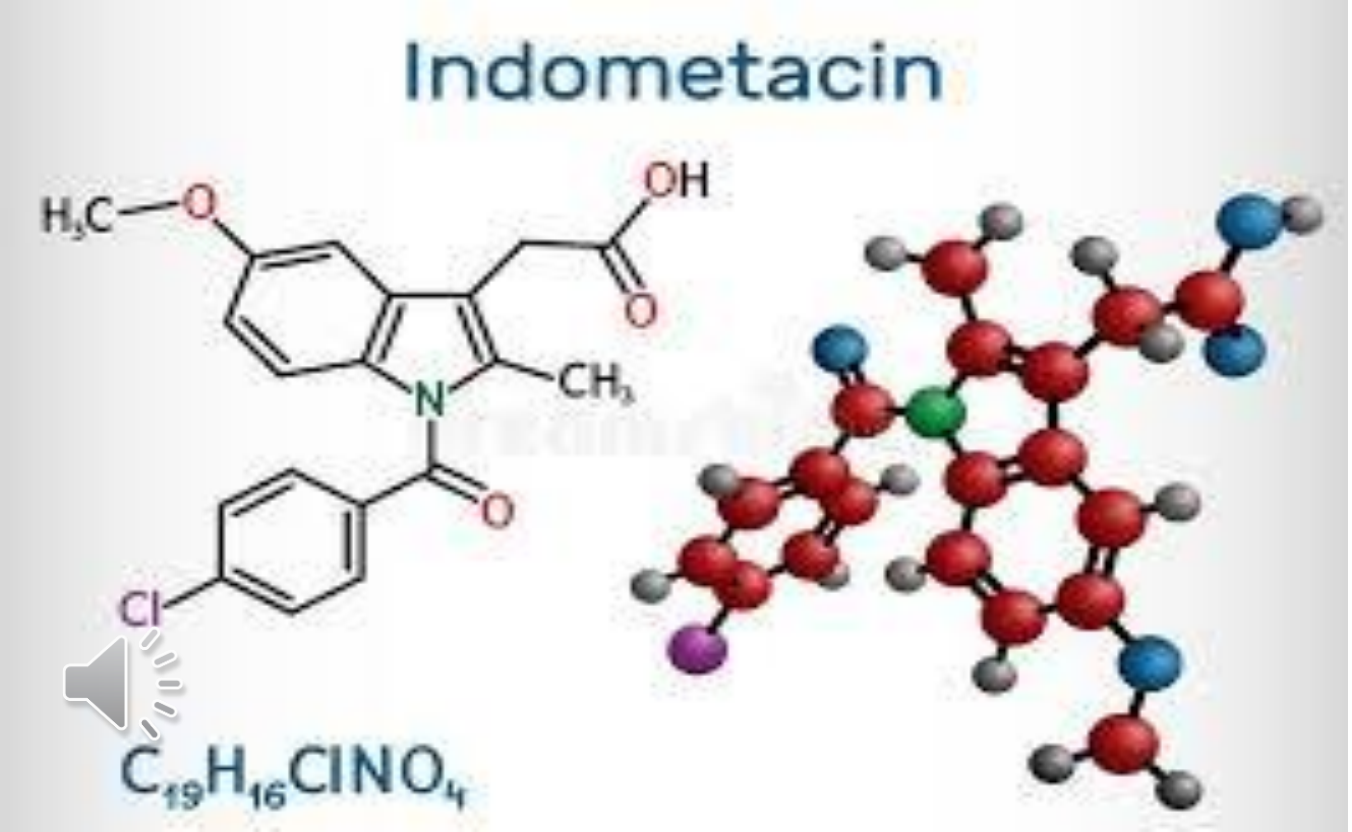
- **In acidimetry assay,** the volume and concentration of standerized acid solution are used in order to determine the weight of sample (a base).
- **In alkalimetry assay,** the standerized basic solution is titrated with the acidic sample solution in order to determine the weight of the active component (an acid) in pharmaceutical preparations.

Alkalimetry Assay of Indomethacin

- **Indomethacin** is a potent nonsteroidal anti-inflammatory drug (NSAID) typically used for chronic inflammatory arthritis. As a nonsteroidal anti-inflammatory drug (NSAID), indomethacin inhibits the enzyme cyclooxygenase, thereby preventing cyclooxygenase-mediated DNA adduct formation by heterocyclic aromatic amines.

Physical Properties

Indomethacin is a white or yellow, crystalline powder.
It is weak acid (p*k*a 4.2) has poor solubility in water. Soluble in acetone (40 mg/ml - clear, yellow solution), ethanol (20 mg/ml), ether. Soluble in chloroform (50 mg/ml).



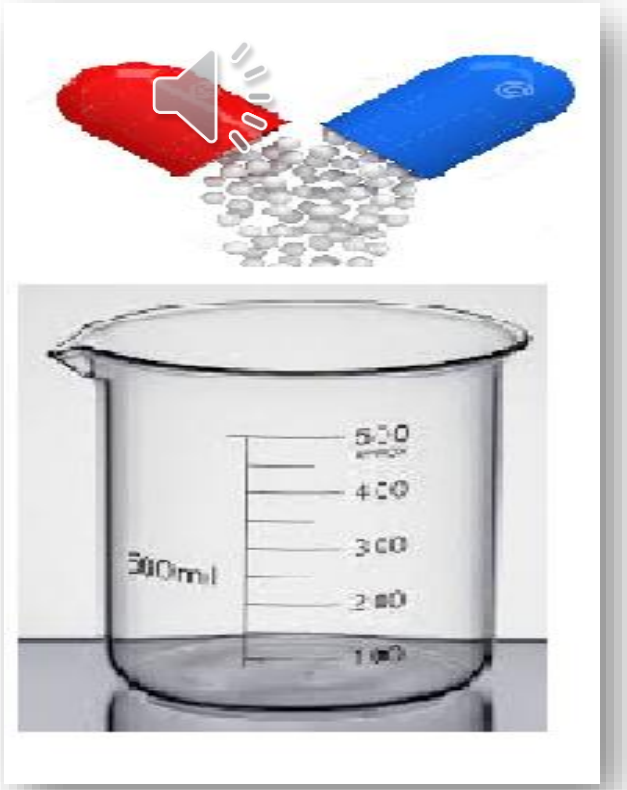
2-[1-(4-chlorobenzoyl)-5-methoxy-2-methylindol-3-yl]acetic acid

The aim of this experiment

- Apply Alkalimetry assay to determine the content of Indomethacin in a capsule of 25mg

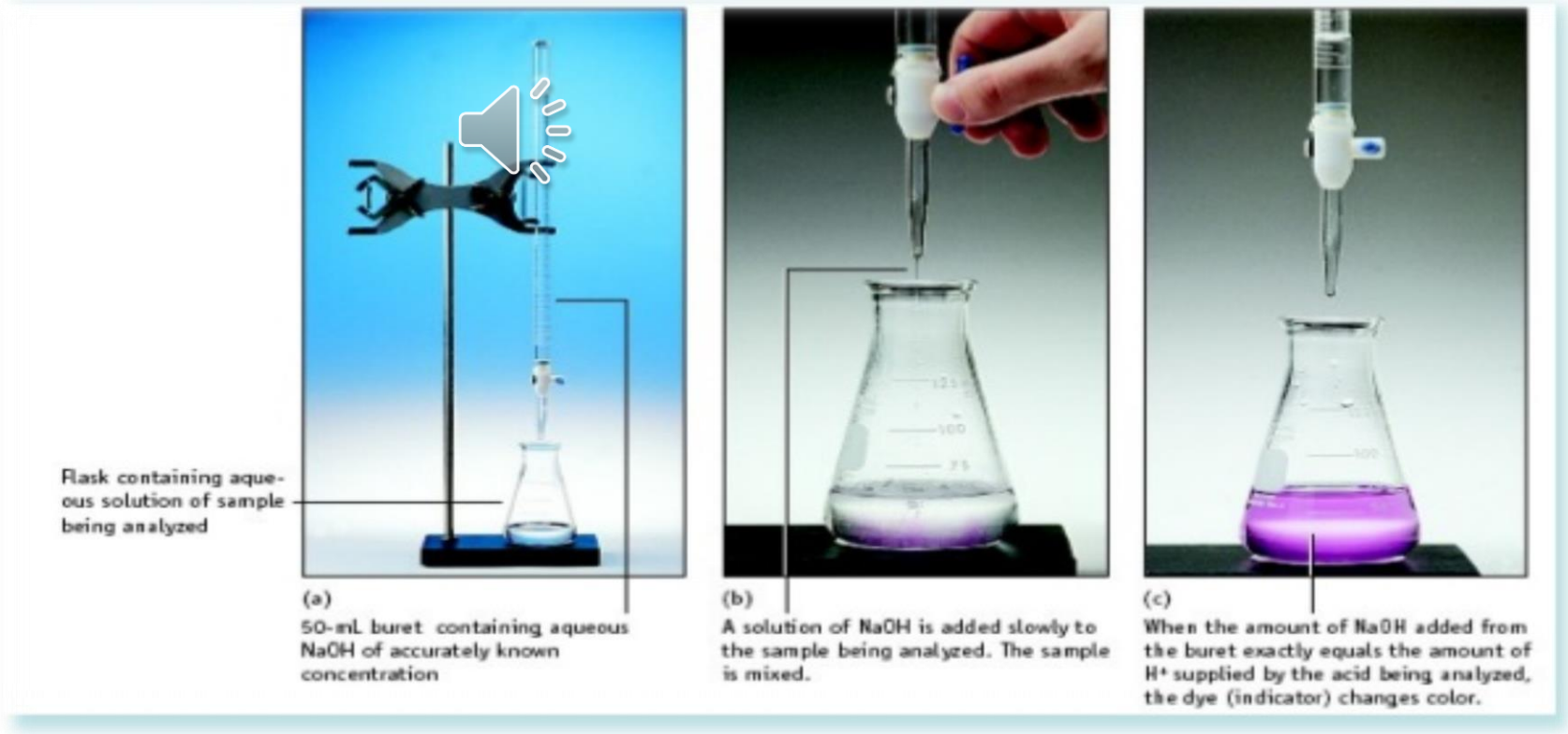
Procedure

- Dissolve the content of one capsule (25mg) in a beaker by addition of 10 ml of acetone



- Shake then filter into a conical flask and wash twice with 5 ml of acetone +5ml.

- Titrate the filtrate with 0.01N NaOH using ph.ph as an indicator.



Chemical Factor

Is the weight of substance (analyt) that equivalent 1 mL of standered solution.

Calculations (Chemical Factor)

NaOH standard basic solution **Indomethacin (acidic sample)**

1eq.wt 1N NaOH = **1eq.wt** Indomethacin

1Liter of 1N NaOH = 357.8 Indomethacin

1mL 1N NaOH = 357.8 Indomethacin /1000

1ml .1N NaOH = o.3578 Indomethacin /100

1ml 0.01N NaOH = 0.003578 gm Indomethacin

Calculations

Wt practical =Chemical factor x V NaOH

- Wt% = Wt practical /Wt theoretical X 100
- **Recovery % = practical content/ theoretical = ($\boldsymbol{VB\ XNB\ X\ Eq.Wt}$)/25 X 100**

Thank You